

A quantitative study on the effects of sponsorship disclosure and product placement on exercise motivation

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ABSTRACT,

In the current digital era, Instagram fitness influencers significantly shape health behaviors among young adults. This study explores the impact of perceived trustworthiness of these influencers on exercise motivation and investigates the roles of product placement and sponsorship disclosure in this dynamic. The research identifies a critical issue: perceived trustworthiness of influencers does not significantly enhance exercise motivation. Additionally, neither product placement nor sponsorship disclosure significantly moderates this relationship. These findings highlight a complex problem: while influencer authenticity is important, other factors are essential for effectively motivating exercise behaviors. This study contributes to the understanding of the intricate effects of influencer marketing on health behaviors, offering practical insights for marketers. The research underscores the necessity of diverse strategies beyond influencer trustworthiness to motivate audiences, guiding future research and enhancing digital communication strategies in the evolving landscape of social media-driven health promotion.

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Keywords

Influencer Marketing, Trustworthiness, Exercise Motivation, Product Placement, Sponsorship Disclosure, Health Behavior

1. INTRODUCTION

Instagram has become a crucial social media platform for health information focusing heavily on fitness and exercise. Fitness influencers use the platform to motivate their followers by showing them different exercises and sharing health tips. These influencers use their knowledge and appealing visuals to encourage people to stay active (Noonan, 2018).

Their main reason for this is because they care about the health of the people who follow them. Fitness influencers believe that exercising and eating well can make a big difference in people's lives. They want to be a positive influence in a world where it is easy to fall into unhealthy habits. So they want to share their own experiences and tips to encourage others to prioritize their health and feel good about themselves.

Many of these fitness influencers also have a financial incentive to promote this healthy lifestyle. It is common for them to get sponsored by fitness brands or companies that sell related products, like workout gear or supplements. This means they might get paid or receive free stuff in exchange for promoting these products to their followers. So, while they genuinely want to inspire people to be healthier, there is often a business side to their social media presence too.

Exercising is widely recognized as beneficial for cardiovascular health, physical fitness, and mental well-being. The World Health Organization (WHO) recommends at least 150 to 300 minutes of moderate aerobic activity per week for adults, along with daily moderate aerobic activity for children and adolescents. Conversely, excessive sedentary behavior heightens the risk of chronic diseases such as heart disease, cancer, and type-2 diabetes (World Health Organisation, 2020).

The influence of social media is particularly significant among young people. For instance, in the Netherlands, a study showed that 25.5% of young adults aged 18-25 were overweight in 2022, which is an increase from previous years (CBS, 2023). This age group also makes up about 31.8% of all Instagram users, meaning they frequently see content from fitness influencers (Stacy Jo Dixon, 2024).

Fitness influencers on Instagram play a crucial role in shaping health behaviors, particularly through their trustworthiness, which can significantly affect their followers' motivation to exercise. This trustworthiness enhances the motivation power of the influencers, making their fitness promotions more effective (Durau et al., 2022)(Faezah Ramlan et al., 2022).

1.1 Research objective and question

Considering the impact of influencers, this research investigates how specific elements in their posts, such as product placements and sponsorship disclosures, affect young adults' motivation to exercise. The study aims to understand whether knowing that an influencer is compensated for promotions changes their motivational influence.

The main questions of this research are:

1. "How does the perceived trustworthiness of fitness influencers on Instagram influence individuals' exercise motivation?"
2. "How do product placement and sponsorship disclosure affect the relationship between the trustworthiness of fitness influencers and individuals' exercise motivation?"

1.2 Academic and practical relevance

This research builds on existing studies, such as those by Durau et al. (2022), which highlight the significant impact of trust in fitness influencers on exercise motivation. It further examines how this trust might be influenced when influencers disclose sponsorships or include product placements in their posts, a critical consideration on social media platforms like Instagram, where influencers actively encourage their followers to engage in physical activities.

The study addresses a crucial gap by exploring how the presentation of products affects followers' perceptions of an influencer's trustworthiness. This exploration is vital for understanding consumer reactions to these marketing techniques, especially on visually focused platforms like Instagram. For instance, Kit & P'ng (2014) discussed how product visibility can affect audience perception, shedding light on how both subtle and overt product placements might impact consumer trust and reaction.

Further insights can be drawn from studies such as those conducted by Ewers (2017), which explore the dynamics of sponsorship disclosure and its effects on perceived authenticity and consumer behavior. This study suggests that while sponsorship disclosures can enhance transparency, they may also lead to skepticism among consumers if the promotional attempts appear overly commercial.

Moreover, the research links marketing strategies to health-related behaviors, offering valuable insights across both marketing and health communication fields. This interdisciplinary approach not only enhances understanding of effective marketing tactics to promote healthier lifestyles but also enriches the broader discourse on digital marketing strategies. By integrating concepts from public health and marketing, the study provides a comprehensive view of how influencer marketing can be ethically and effectively used to influence health behaviors on social media, guiding future research and refining communication strategies in the digital realm.

2. LITERATURE REVIEW AND HYPOTHESES

2.1 Influencer and influencer marketing

Influencer marketing is the "art and science of engaging with people who are influential online to share brand messages with their audiences in the form of sponsored content" (Sammis et al., 2006). Brands carefully identify and collaborate with influencers whose expertise and audience demographics align with their marketing goals. This strategic alignment ensures that product placements are seamlessly integrated into the influencers content, thereby promoting the products authentically and effectively. Such partnerships rely on the influencers ability to connect with and influence potential customers, making it a powerful tool for brands to connect with the right target group and show their products to a big audience within a short period of time (Alassani & Göretz, 2019). Influencer marketing is a relatively new yet highly popular marketing tactic. Spending in this area has seen a significant increase over the past few years, rising from \$9.7 billion in 2020 to \$21.1 billion in 2023—a growth of 117.53% in just three years. This trend is expected to continue, with predictions indicating that influencer marketing will outperform other tactics (Clapp, 2021; Dencheva, 2024).

The first influencers emerged as bloggers in the late 1990s, but influencers have transformed into pivotal figures across platforms like Instagram, significantly expanding their reach and diversifying their content. Today's influencers build

large followings by working with brands and carefully crafting their online images, a far cry from the early, simpler days of blogging (Hudders et al., 2021).

Brands often choose for influencer marketing due to its cost-effectiveness and ability to reach specific groups of people effectively. This approach is attractive because influencers are usually less costly than traditional celebrities but can still reach large audiences. The cost to hire an influencer depends on their popularity, how much they engage with their followers, and their overall impact (Charlesworth, 2018). Typically, a company will contact an influencer by email to discuss terms, which might include payment, free products, or other benefits in exchange for promoting the brand. Although this marketing method is cheaper than traditional forms, it still involves costs (Woods, 2016). Influencers know their endorsements are valuable, so they often expect some form of reward. Common types of payment include keeping the products they promote or getting exclusive information. Sometimes, influencers are also invited to events, it is then expected from them to share their experiences online, which helps spread the brand's message even further (Charlesworth, 2018; Juhlin et al., 2018).

The presentation of promotional content varies by platform for instance, Instagram influencers typically post photos, while YouTube influencers might make detailed videos about the products (Juhlin et al., 2018). However, the success of influencer marketing relies not only on how popular or visually appealing the influencers are but mainly on how trustworthy and knowledgeable they appear. Regardless of how much they are paid or how they collaborate with brands, influencer marketing will only work if the audience trusts the influencer's recommendations. While initial interest might be drawn by the influencer's fame or looks, it is their authenticity and expertise that truly influence consumer behavior over time (Gustavsson et al., 2018).

2.2 Trustworthiness

Trust is defined as "confidence in an exchange partner's reliability and integrity" (Morgan R & Hunt S, 1994). It builds up when individuals consistently meet their commitments (Grönroos, 1990). To develop this trust, a person needs to behave in ways that others view as dependable. In communication, if people believe in what someone says, it means they trust that person and feel comfortable relying on their messages. If someone often shows through their actions that they can be trusted, others are more likely to trust them more over time.

Trust is developed through ongoing interactions and plays a key role in relationships. It allows people to feel secure about what they can expect in future dealings with each (Kim & Kim, 2021). In the world of social media influencers, if followers trust an influencer, they believe that their connection with the influencer will bring them positive results.

In a study done by Durau et al. (2022) there is investigated the influence of social media fitness influencers on the exercise intentions of their followers, focusing particularly on the roles of perceived trustworthiness, expertise, and attractiveness of the influencers. Trustworthiness emerges as a critical component, significantly impacting how effective influencers are in motivating users to engage in physical activity. Key findings from the article reveal that trustworthiness is not only crucial for evaluating the influencers but also directly influences the perceived motivating power of the influencer. This perceived motivating power is a more potent predictor of exercise intentions than simply holding a favorable attitude toward the influencer. Essentially, followers are more inclined to

adopt the exercise behaviors recommended by influencers they trust. Based on these findings, the following hypothesis will be tested:

H1: Trustworthiness of fitness influencers on Instagram positively influences followers' exercise motivation.

2.3 Sponsorship disclosure

Sponsorship disclosure in influencer marketing critically affects trustworthiness in the Netherlands where the Dutch Advertising Code Authority (Stichting Reclame Code, SRC) mandates clear disclosure of any commercial relationships that could influence the content influencers publish. This is enforced to prevent covert advertising, deemed illegal under Dutch law (SRC, 2023). Clear disclosure is intended to increase transparency and potentially boost audience trust by making them aware of the commercial relationships behind the content they consume.

However, such disclosures can also activate the audience's persuasion knowledge, potentially leading to skepticism towards the message. This awareness of the advertising intent can negatively impact the influencer's perceived authenticity and lessen the effectiveness of the promotional message (Boerman & van Reijmersdal, 2016). Furthermore, researchers like Obermiller & Spangenberg (2000), Rotfeld (2008) and Koslow (2000) suggest that consumers are naturally wary of advertising, and clear disclosures might prepare them for an advertisement, potentially leading to resistance to persuasion attempts. This could paradoxically make the sponsored content less effective by making it appear overly commercial, thus decreasing the trust and impact of the influencer's message (Korotina & Jargalsaikhan, 2016).

Given the controversy around influencer marketing on Instagram and consumer demands for transparency, exploring how sponsorship disclosure impacts perceptions and responses on social media platforms is critical. This examination can lead to hypothesizing that while sponsorship disclosure aligns with ethical advertising practices, it may paradoxically result in a less motivating effect on consumers' exercise intentions than when such advertising is not overtly disclosed. Based on these findings, the following hypothesis will be tested:

H2: Sponsorship disclosure will weaken the relationship between trustworthiness of fitness influencers on Instagram and followers' exercise motivation.

2.4 Product placement

A type of influencer marketing is product placement. The product will be used and promoted by the influencer in order for the brand to gain more visibility and recognition. The goal is to familiarize customers with the product by leveraging the credibility and attractiveness of the influencer. Through this strategy, brands aim to create associations between their products and the influencers, thereby increasing consumer trust and appeal (Bogoevska-Gavrilova & Ciunova-Shuleska, 2022).

Product placement in influencer marketing can significantly influence how consumers perceive the authenticity and trustworthiness of the influencer. While product placement aims to increase brand visibility and recognition by leveraging the influencer's credibility and attractiveness, it also raises concerns about the sincerity of the influencers' endorsements.

Studies such as those by Gupta & Lord (1998) explain that product placement involves including branded products in content, which on platforms like Instagram, can be quite obvious

and hence more noticeable to the audience. If the product placement is too obvious, it can lead the audience to doubt the authenticity of the influencers endorsements.

Fennis & Stroebe (2020) describe product placement as the paid inclusion of branded products or identifiers, which does not necessarily require the actual product to be visible (it could also be the brand name or logo). However, the more prominent the product placement, the more likely it is to evoke negative reactions from consumers, as they might perceive the influencer as less genuine and more motivated by commercial gains rather than genuine support for the product (van Reijmersdal et al., 2009) (Homer, 2009).

Research has shown that when consumers feel that an influencer is overtly pushing a product, it can lead to decreased trust in the influencer (Cowley & Barron, 2008). This loss of trust happens because followers start to see these actions as manipulative, which hurts the influencer's credibility. While brands hope to create a positive link between their products and the influencers, being too forceful can actually make followers less interested and trusting. Based on these findings, the following hypothesis will be tested:

H3: Product placement will weaken the relationship between trustworthiness of fitness influencers on Instagram and followers' exercise motivation.

2.5 Conceptual framework

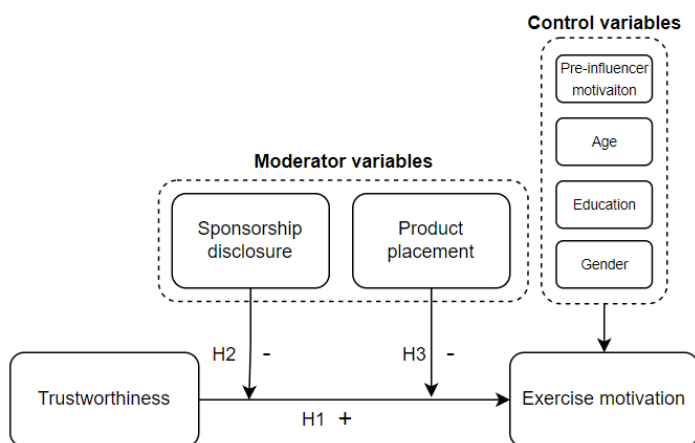


Figure 1. Conceptual framework

3. METHODOLOGY

3.1 Sample

For this study, the objective was to collect responses from at least 100 participants via an online questionnaire distributed in English through personal networks and across three different social media platforms: LinkedIn, Instagram, and WhatsApp. This distribution strategy was chosen to ensure a wide demographic reach and secure a sufficiently large sample size. Ultimately, 148 responses were collected. After filtering, 102 responses were deemed useful for analysis. To maintain confidentiality and uphold ethical research standards, all survey responses were anonymous. Participants had the flexibility to pause and resume the questionnaire at their convenience and could withdraw from the study at any time without consequences.

Achieving a high response rate was critical for several reasons. Firstly, a larger number of responses decreases the

margin of error and enhances the accuracy of the study's findings, making the results more statistically significant. Secondly, a larger dataset provides a more accurate representation of the population, allowing for stronger generalizations from the sample to the broader population. Research suggests that higher response rates typically lead to reductions in response bias, a systematic error that occurs when the characteristics of those who participate in the study differ from those who do not, potentially skewing the results (Groves, 2009).

The target demographic for the survey was participants aged 18-25, who are actively engaged with fitness influencers on Instagram. Respondents outside this age range, those who disagreed with the terms and conditions, or those unfamiliar with fitness influencers on Instagram were excluded. This criterion ensured that the data collected was relevant and reliable, focusing on a demographic that is most likely influenced by fitness-related content on social media.

3.2 Method

Quantitative research often utilizes surveys as a method to collect data, which allows for structured and measurable responses that can be statistically analyzed. According to Saunders, M., Lewis, P., & Thornhill (2023), surveys are especially effective for descriptive or explanatory research that seeks to quantify opinions, behaviors, or phenomena by using standardized questions, ensuring that respondents interpret the questions similarly. This method facilitates the systematic collection of data from a large number of respondents, which is essential for generalizing results to a broader population.

In line with these principles, this study employed an online survey to gather quantitative data, leveraging the advantages of wide reach and convenience for both researchers and participants. The survey was conducted using Qualtrics, a robust online survey platform that ensures efficient data collection across diverse demographics. The survey questions were carefully crafted, drawing on existing literature to ensure validity and reliability. Responses were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This scale allows participants to express varying degrees of agreement or disagreement with the statements provided (Likert, 1932). The five-point Likert scale is widely recognized for its ability to capture the intensity of respondents' feelings about a particular issue and is particularly useful in studies that assess attitudes, perceptions, and other subjective measures. Additionally, a 2x2 factorial design was employed in the study to examine the effects of product placement and sponsorship disclosure on perceived trustworthiness and exercise motivation. This design allowed for the investigation of the main effects of each factor (product placement and sponsorship disclosure) as well as their interaction effects. Participants were randomly assigned to one of the four conditions, ensuring a balanced and unbiased distribution of the experimental manipulations.

The survey began by verifying that respondents had an Instagram account and were familiar with the term "fitness influencer." If respondents were unfamiliar with the term, a brief definition and examples were provided. This section ensured that all participants had the necessary context to understand the subsequent questions.

Participants were then asked to respond to a series of statements regarding their general attitudes towards fitness and exercise motivation. These statements were measured using a five-point Likert scale. This section aimed to establish a baseline

for participants' fitness attitudes before being exposed to any stimulus material.

Next, participants were presented with one of four hypothetical Instagram posts created specifically for this study, featuring a fictitious fitness influencer named Felix. Each post varied in terms of product placement and sponsorship disclosure to examine their effects on perceived trustworthiness and exercise motivation. The caption for every version was: "At the gym today, I gave @boost_lifestyle's pre-workout a try, and let me tell you, it's absolutely fantastic. Highly recommend!" The variations were either the inclusion of "#ad" for sponsorship disclosure or the presence/absence of the product in the picture for product placement. After viewing the stimulus material, participants answered additional questions assessing their perceptions of the influencer's trustworthiness and their own motivation to exercise, again using a five-point Likert scale. This section aimed to measure any changes in attitudes resulting from the exposure to the stimulus material.

The survey concluded with demographic questions, including age, gender, and highest level of education. This information was collected to control for these variables in the analysis and ensure a diverse sample.

Participation in the survey was voluntary, and respondents were assured of the confidentiality and anonymity of their data. An informed consent statement was presented at the beginning of the survey, explaining the purpose of the study, the voluntary nature of participation, and the measures taken to ensure data privacy. Participants could withdraw from the survey at any time without consequence.

By using this approach, the study aims to obtain precise measurements of variables such as trustworthiness of influencers and the impact of sponsorship disclosure on consumer behavior, facilitating robust analysis and meaningful conclusions.

Table 1. Operationalization table

Variable	Source	Operationalization
Trustworthiness (IV)	Ohanian (1990)	Measured through participant agreement with statements regarding the influencer's dependability, honesty, reliability, sincerity, and overall trustworthiness.
Exercise motivation (DV)	Durau et al. (2022)	Assessed through participant agreement with statements on the importance of fitness routines, motivation to exercise, enjoyment of physical exercise, commitment to a healthy lifestyle, and goal-setting.
Sponsorship disclosure (MV)		Two scenarios: (1) With disclosure - Instagram post caption includes "#ad". (2) Without disclosure - Instagram post caption does not include "#ad".

Product placement (MV)

Two scenarios: (1) Visible product placement - product is clearly visible in the post. (2) No product placement - product is not visible in the post.

Age, Education, Gender (CV)

Control variables collected through demographic questionnaire to account for potential confounding effects.

Pre-influencer motivation (CV)

Baseline measure of participants' motivation to exercise prior to exposure to influencer content, used to control for initial motivation levels.

3.2.1 Control Variables

Control variables are essential in ensuring the validity of research findings by accounting for potential confounding factors that could affect the outcomes. In this study, which focuses on the influence of fitness influencers on exercise motivation among Instagram users, several control variables have been selected based on their potential impact.

The age group targeted is 18-25 years because they are significant users of social media and are highly influenced by online trends. In the Netherlands, a notable 25.5% of young adults within this age range were reported as overweight in 2022, underscoring their engagement with health-related content online (CBS, 2023). Furthermore, this demographic constitutes about 31.8% of all Instagram users, frequently interacting with fitness influencer content (Stacy Jo Dixon, 2024).

The educational background of participants may influence how they perceive and are influenced by fitness influencers. Education can affect an individual's ability to critically evaluate the credibility of online information and may impact how they respond to influencer marketing (Chakraborty et al., 2016).

Gender differences may affect how individuals interact with and are influenced by social media content, including content from fitness influencers. Men and women may respond differently to the same content, possibly due to variations in socialization or interests, highlighting the need to consider gender as a control variable (Mayoh & Jones, 2021).

Additionally, establishing a baseline of participants' motivation to exercise before they are exposed to influencer content helps to measure the change or influence exerted by the influencer. This baseline is crucial for assessing the direct impact of influencer interactions.

3.3 Analysis

To analyze the collected survey data, the data was imported into RStudio. The first step of the analysis was to prepare the data. This involved creating respondent ID variables and removing unnecessary columns. Respondents who did not consent to the survey were filtered out to ensure that only consenting participants' data was included in the analysis.

Next, the questionnaire version each respondent received was identified. This allowed categorization of responses

based on different scenarios presented in the survey. Variables related to trustworthiness and exercise motivation were combined across different questionnaire versions to create consistent variables for analysis. Demographic variables, including gender, age, and education, were standardized and combined. A baseline measure of participants' exercise motivation prior to exposure to influencer content was calculated to control for initial motivation levels.

Subsequently, the scales were first validated by calculating Cronbach's Alpha. For this, the thumb rule of Nunnally & Bernstein (1994) was used, which suggests that an alpha of 0.7 or higher is acceptable to assume that the items of a variable are internally consistent.

Descriptive statistics, including means, standard deviations, minimum, and maximum values, were calculated for the main variables. This provided an overview of the data distribution and central tendencies. Additionally, descriptive statistics were grouped by randomizer version to examine differences across the different survey scenarios. To explore the relationships between variables, a correlation matrix (Appendix Table 5) was calculated. This helped in understanding how trustworthiness, exercise motivation, and other factors were interrelated.

Regression models were fitted to assess the impact of various factors on exercise motivation. The first model included only the control variables (gender, age, education, and pre-influencer motivation). The second model added the main independent variable (trustworthiness) to evaluate its direct effect. The third model incorporated interaction variables for sponsorship disclosure and product placement to analyze their moderating effects on the relationship between trustworthiness and exercise motivation.

Finally, the results of the regression analyses, including the interaction model, were summarized and compared. This comprehensive approach provided a detailed understanding of the relationships between the variables, highlighting the significance and impact of trustworthiness, sponsorship disclosure, and product placement on exercise motivation.

4. RESULTS

4.1 Respondent's profile

Table 2 below shows the socio-demographic characteristics of the respondents, such as age, education and gender.

Table 2- Socio-demographic characteristics (N=102)

	Frequency	Percentage
Age		
18	7	6.86
19	5	4.90
20	12	11.8
21	30	29.4
22	31	30.4
23	10	9.80
24	4	3.92
25	3	2.94
Education		
Secondary School	27	26.5
Bachelor's degree	59	57.8

Master's degree	13	12.7
Apprenticeship	3	2.94
Gender		
Female	56	54.9
Male	46	45.1

4.2 Descriptive analysis

Table 3 presents the descriptive statistics for the different items of the independent variables (trustworthiness) and the dependent variable (exercise motivation). As shown in the table, all items of exercise motivation have similar means and standard deviations, indicating consistency across these measures. For trustworthiness, the means and standard deviations are also relatively close, suggesting a cohesive measure of this construct. See table 6,7,8 and 9 in the Appendix for an overview of the descriptive statistics of all the different versions.

Table 3 - Descriptive statistics

	Mean	SD	α
Exercise motivation			0.921
Ex_1	2.088	1.073	
Ex_2	2.235	1.101	
Ex_3	2.137	1.044	
Ex_4	2.431	1.156	
Ex_5	2.255	1.050	
Trustworthiness			0.879
Tr_1	2.794	1.037	
Tr_2	2.608	1.016	
Tr_3	2.598	1.065	
Tr_4	2.520	1.041	
Tr_5	2.58	0.97	

4.3 Scale validation

4.3.1 Cronbach's Alpha

To test the reliability of the measurement scales, Cronbach's Alpha has been calculated (Table 3). The composite measure of exercise motivation, which includes the items Ex_1 to Ex_5, scored an alpha of 0.921. This high alpha value indicates that the items used to measure exercise motivation are highly consistent with each other. The composite measure of trustworthiness, which includes the items Tr_1 to Tr_5, scored an alpha of 0.879. This also indicates a high level of internal consistency among the items used to measure trustworthiness.

When examining the different randomizer versions, the following Cronbach's Alpha values were observed:

- For Randomizer Version 1 (Nothing), the exercise motivation items scored an alpha of 0.935, and the trustworthiness items scored an alpha of 0.873.
- For Randomizer Version 2 (Sponsorship disclosure), the exercise motivation items scored an alpha of 0.960, and the trustworthiness items scored an alpha of 0.874.
- For Randomizer Version 3 (Product placement), the exercise motivation items scored an alpha of 0.923, and the trustworthiness items scored an alpha of 0.886.
- For Randomizer Version 4 (Product placement + Sponsorship disclosure), the exercise motivation items

scored an alpha of 0.860, and the trustworthiness items scored an alpha of 0.874.

An alpha of 0.7 or higher indicates internal consistency between items (Nunnally & Bernstein, 1994). As both the dependent variable (exercise motivation) and the independent variable (trustworthiness) scored significantly above 0.7 across all versions, it can be concluded that the items used in these scales are internally consistent. This high level of consistency enhances the reliability of the measurement scales used in this study, ensuring that the constructs are measured accurately.

4.4 Correlation

Based on the descriptive analysis performed earlier, a correlation matrix was created to understand the relationships between the exercise motivation and trustworthiness variables, as well as the control variables. The detailed correlation matrix, including control variables, is available in Table 5 in the Appendix.

The correlation matrix reveals strong positive correlations within the exercise motivation variables (Ex_1 to Ex_5). For instance, Ex_1 and Ex_2 exhibit a correlation of 0.729, indicating a significant relationship between these items. Similarly, the trustworthiness variables (Tr_1 to Tr_5) show robust positive correlations among themselves, with Tr_2 and Tr_5 displaying a particularly high correlation of 0.785.

Interestingly, some exercise motivation variables also correlate with trustworthiness variables. For example, Ex_5 is positively correlated with Tr_2 (0.243), suggesting that higher perceived trustworthiness is associated with increased exercise motivation.

Incorporating control variables into the analysis provides additional insights. Pre-existing exercise motivation (Pre_Ex) is positively correlated with the exercise motivation variables measured in the study, such as Ex_3 (0.167) and Ex_5 (0.109). Age shows a weak positive correlation with some exercise motivation variables, such as Ex_5 (0.183), indicating a slight trend where older participants may have higher exercise motivation. Education has weak correlations with both exercise motivation and trustworthiness variables, such as Ex_1 (0.242) and Tr_1 (-0.062).

It is important to interpret the correlations involving the control variables with caution. The numeric encoding of categorical variables such as Gender and Education is for technical purposes to facilitate the correlation calculation. These encoded values (e.g., 1 for Male, 2 for Female) do not have a meaningful numerical relationship, and thus the correlations should be interpreted carefully. For example, Gender shows a negative correlation with the exercise motivation variables, such as Ex_1 (-0.220) and Ex_2 (-0.345), but these values do not imply a direct numeric relationship.

4.5 Hypotheses testing

Table 4 shows the regression results of the relationship between the independent variable (Trustworthiness) and the dependent variable (Exercise Motivation), including the control variables Female, Age, Education, and Pre_Ex Motivation. The adjusted R² for the regression model increases from 0.154 to 0.224, indicating that up to 22.4% of the variance in exercise motivation is explained by the model with the inclusion of interaction terms. The significance of the control variables and the independent variable is noted.

4.5.1 Hypothesis 1

The results in Table 4 show a β of 0.203 and a p-value of 0.114 for the relationship between Trustworthiness and Exercise Motivation in Model 2. In Model 3, the β remains at 0.201 with

a p-value of 0.194. Although the β coefficients indicate a positive relationship, the p-values are not significant at the 0.05 level. Therefore, there is not enough evidence to support H1. Trustworthiness of fitness influencers on Instagram does not significantly influence followers' exercise motivation based on this analysis.

4.5.2 Hypothesis 2

For the relationship between Sponsorship disclosure and the interaction with Trustworthiness on Exercise Motivation, Table 4 shows a β of -0.293 and a p-value of 0.213 for the interaction term Tr \times Sponsorship in Model 3. The negative coefficient suggests that sponsorship disclosure weakens the relationship, but the p-value is not significant at the 0.05 level. Therefore, there is not enough evidence to support H2. Sponsorship disclosure does not significantly weaken the relationship between trustworthiness of fitness influencers on Instagram and followers' exercise motivation.

4.5.3 Hypothesis 3

For the relationship between Product Placement and the interaction with Trustworthiness on Exercise Motivation, Table 4 shows a β of 0.254 and a p-value of 0.216 for the interaction term Tr \times Product Placement in Model 3. The positive coefficient contradicts the hypothesis, and the p-value is not significant at the 0.05 level. Therefore, there is not enough evidence to support H3. Product placement does not significantly weaken the relationship between trustworthiness of fitness influencers on Instagram and followers' exercise motivation.

Table 4 – Regression results

	Model controls	Model controls + IV	Model controls + IV + moderators
Intercept	0.432 (1.539)	-0.053 (1.545)	-0.102 (1.586)
IV (Trustworthiness)		0.203 (0.114)	0.201 (0.194)
Moderators			
Sponsorship			0.736 (0.581)
Product Placement			-0.443 (0.592)
Tr \times Sponsorship			-0.293 (0.213)
Tr \times Product Placement			0.254 (0.216)
Controls			
Female	-0.507 (0.185)**	-0.480 (0.183)*	-0.440 (0.184)*
Age	0.076 (0.068)	0.066 (0.067)	0.061 (0.068)
Secondary School	0.048 (0.238)	0.106 (0.237)	0.050 (0.238)
Bachelor's degree	-0.056 (0.324)	0.091 (0.331)	0.077 (0.330)
Master's degree	1.264 (0.554)*	1.042 (0.562)*	0.938 (0.563)
Pre_Ex Motivation	0.108 (0.107)	0.130 (0.107)	0.144 (0.106)
R2	0.154	0.182	0.224

*** p<0.001, ** p<0.01, * p<0.05

4.6 Control variables

Regarding the control variables, several show significant effects on exercise motivation. Specifically, gender and education exhibit noteworthy results across the models.

Female participants consistently show a significant negative effect on exercise motivation. In Model 1, the coefficient for female is $\beta = -0.507$ with a p-value of 0.01, in Model 2, $\beta = -0.480$ with a p-value of 0.05, and in Model 3, $\beta = -0.440$ with a p-value of 0.05. This indicates that being female is associated with a decrease in exercise motivation.

Age does not show a significant effect on exercise motivation in any of the models. The coefficients are small, and the p-values exceed the 0.05 significance threshold, indicating no substantial impact of age on exercise motivation.

Regarding education, having a master's degree significantly positively affects exercise motivation. In Model 1, the coefficient is $\beta = 1.264$ with a p-value of 0.05, and in Model 2, it is $\beta = 1.042$ with a p-value of 0.05. Although the effect remains positive in Model 3 ($\beta = 0.938$), it is slightly above the significance threshold with a p-value of 0.056. This suggests that higher education levels are associated with increased exercise motivation. However, secondary school and bachelor's degree levels do not show significant effects in any of the models.

Pre-existing exercise motivation (Pre_Ex) does not show a significant effect on exercise motivation in any of the models. The coefficients are small, and the p-values are above the 0.05 significance threshold, indicating no significant impact from initial exercise motivation levels.

4.7 Summary of the results

The analysis began with examining the socio-demographic characteristics of the respondents. The sample consisted of 102 participants, predominantly aged 21 to 22, with most holding a bachelor's degree. Gender distribution was nearly equal, with a slight majority of female respondents.

The descriptive analysis confirmed the reliability of the measurement scales for exercise motivation and trustworthiness, with Cronbach's Alpha values of 0.921 and 0.879, respectively, indicating high internal consistency. This was consistent across all randomizer versions, which also showed high alpha values.

The correlation analysis revealed strong positive correlations within the exercise motivation variables (Ex_1 to Ex_5) and within the trustworthiness variables (Tr_1 to Tr_5). Some exercise motivation variables were also positively correlated with trustworthiness variables, suggesting an association between higher perceived trustworthiness and increased exercise motivation.

Regression analyses tested the study's hypotheses. Trustworthiness did not significantly influence exercise motivation, nor did the interaction terms for sponsorship disclosure and product placement significantly alter this relationship. Therefore, H1, H2 and H3 were not supported by the data.

5. DISCUSSION

The goal of this research was to assess the relationship between the trustworthiness of fitness influencers on Instagram and followers' exercise motivation, considering the moderating effects of sponsorship disclosure and product placement. To reach this objective, the research question was divided into three hypotheses.

For the first hypothesis, "Trustworthiness of fitness influencers on Instagram will positively influence followers' exercise motivation," the regression analysis results did not show significant support. While the relationship between trustworthiness and exercise motivation was positive, the results were not statistically significant. Therefore, there is not enough evidence to support H1. This finding suggests that trustworthiness alone may not be sufficient to significantly boost exercise motivation, which partially aligns with Durau et al. (2022). Their study indicated that while trustworthiness is crucial for evaluating influencers, it might not be enough by itself to motivate users to engage in physical activity.

The second hypothesis, "Sponsorship disclosure will weaken the relationship between the trustworthiness of fitness influencers on Instagram and followers' exercise motivation," was also not supported. The regression results indicated a potential weakening effect of sponsorship disclosure, but it was not statistically significant. Consequently, H2 is not supported. This finding contrasts with Boerman & van Reijmersdal (2016), who suggested that sponsorship disclosure could reduce the effectiveness of the promotional message by activating the audience's persuasion knowledge and increasing skepticism.

The third hypothesis, "Product placement will weaken the relationship between the trustworthiness of fitness influencers on Instagram and followers' exercise motivation," was also not supported. Although the interaction between product placement and trustworthiness was not significant, the results indicated a potential positive effect, which contradicts the hypothesis. Therefore, there is not enough evidence to support H3. This finding contrasts with studies by van Reijmersdal et al. (2009) and Cowley & Barron (2008), which suggest that product placements, especially when perceived as overly commercial, can lead to decreased trust in the influencer and negatively impact their motivating power.

The study also showed significant effects for some of the control variables on exercise motivation. Female participants consistently exhibited a significant negative effect on exercise motivation across all models, indicating that being female is associated with a decrease in exercise motivation. This finding aligns with Mayoh & Jones (2021), who found gender differences in responses to fitness-related social media content.

Age did not show a significant effect on exercise motivation in any of the models, which is consistent with the understanding that age may not be a primary determinant of motivation in social media influence contexts.

Regarding education, having a master's degree significantly positively affected exercise motivation. This suggests that higher education levels are associated with increased exercise motivation, aligning with Chakraborty et al. (2016), who suggested that education can influence how individuals perceive and react to online information.

6. CONCLUSION

The central questions of this research were, "How does the perceived trustworthiness of fitness influencers on Instagram influence individuals' exercise motivation?" and "How do product placement and sponsorship disclosure affect the relationship between the trustworthiness of fitness influencers and individuals' exercise motivation?" The study found that the trustworthiness of fitness influencers does not significantly influence followers' exercise motivation. Additionally, product placement and sponsorship disclosure do not significantly alter this relationship.

Regarding the first question, the findings suggest that while perceived trustworthiness is important, it is not sufficient on its own to significantly boost exercise motivation among young adults. This partially aligns with prior research but also highlights the need to consider other factors influencing exercise motivation.

For the second question, the study found that neither sponsorship disclosure nor product placement significantly impacted the relationship between influencer trustworthiness and exercise motivation. This contrasts with previous studies that suggested these factors could increase skepticism and reduce the effectiveness of promotional messages.

To conclude this thesis, some theoretical and practical implications of this study will be discussed below in section 6.1. In addition, limitations and recommendations for future research will be mentioned in section 6.2.

6.1 Implications

6.1.1 Theoretical implications

This research contributes to the existing literature on influencer marketing by examining the influence of perceived trustworthiness, product placement, and sponsorship disclosure on exercise motivation. Previous studies have explored various aspects of influencer marketing, but this study adds a specific focus on the impact of trustworthiness in the context of fitness influencers on Instagram. The findings indicate that trustworthiness alone may not be a strong enough factor to significantly boost exercise motivation, suggesting the need for a broader theoretical framework that includes additional motivational factors.

The study also contributes to the understanding of how sponsorship disclosure and product placement affect the effectiveness of influencer marketing. Contrary to some previous studies that suggested these elements could decrease the perceived authenticity and effectiveness of the promotional message, this research found no significant moderating effects. This highlights the complexity of consumer perceptions and the need for further theoretical exploration into the nuances of influencer marketing strategies.

6.1.2 Practical Implications

From a managerial perspective, this research provides valuable insights for brands and marketers who use influencer marketing to promote exercise and fitness products. The findings suggest that simply relying on the trustworthiness of influencers may not be sufficient to motivate exercise behavior among followers. Brands should consider integrating additional strategies that enhance engagement and motivation, such as interactive content or personalized fitness plans.

The lack of significant impact from sponsorship disclosure and product placement indicates that these elements, while important for transparency and ethical advertising practices, may not necessarily diminish the effectiveness of influencer marketing. Brands can continue to use these strategies without fear of significantly reducing their impact on consumer motivation. However, maintaining authenticity and genuine endorsements remains crucial for building long-term trust with the audience.

Understanding these dynamics is particularly important because it can significantly influence health behaviors among social media users, especially young adults. By leveraging the trust and reach of fitness influencers, brands and health organizations can promote healthier lifestyles effectively. This study underscores the potential of influencer marketing to

be ethically and effectively used to guide health behaviors, emphasizing the importance of genuine engagement and transparent practices. These insights can guide future research and help refine communication strategies in the digital realm, ultimately contributing to better health outcomes.

6.2 Limitations

6.2.1 Short Timeframe

This study was conducted within a short timeframe, which imposes certain limitations. The rapid pace of the research process might have impacted the depth of data collection and analysis, potentially affecting the robustness of the findings. Future research conducted over a longer period could provide more comprehensive insights and allow for a more thorough investigation.

6.2.2 Sample and Generalizability

The sample primarily consisted of young adults who are active on Instagram. While this demographic is highly relevant for studying the impact of fitness influencers, it limits the generalizability of the findings to other age groups or populations. Future research should consider including a more diverse sample to enhance the representativeness of the results. Additionally, the study's findings are based on data from a specific cultural and geographical context. Cultural differences can significantly impact how influencer marketing is perceived and how trustworthiness is evaluated. Future research should explore these relationships in different cultural contexts to determine if the findings are consistent across various populations.

6.2.3 Measurement and Methodology

The reliance on self-reported measures of exercise motivation can be subject to bias. Participants might have provided socially desirable responses rather than accurate reflections of their true motivations. Future studies could employ more objective measures of exercise behavior, such as tracking actual physical activity through wearable devices, to obtain more accurate data. Additionally, the cross-sectional design of the study captures a single point in time and does not account for potential changes in attitudes and behaviors over time. Longitudinal studies would provide more insight into how perceptions and motivations evolve with continued exposure to influencer content. This approach could help to understand the long-term effects of influencer marketing on exercise motivation and behavior.

6.2.4 Analytical Approach

The analytical approach used in this study might not have been the most suitable. While this study used linear regression analysis, other methods might provide more nuanced insights. Employing factor analysis, for example, could help identify underlying constructs and relationships that might be missed with simpler regression models, potentially affecting the results. Future studies should consider using factor analysis to explore the complex interactions between variables more comprehensively.

6.2.5 Stimulus Material and Engagement

The stimulus material used in this study, including AI-generated pictures and potentially unmotivating captions, might not have been sufficiently engaging or realistic. Additionally, the product placements might not have been executed effectively. Participants may not have paid adequate attention to the stimulus material, possibly looking at it too briefly or not engaging with it meaningfully. Future research should consider using more authentic and engaging stimulus materials, possibly incorporating real influencer content to ensure ecological

validity. Methods such as eye-tracking to monitor attention or requiring participants to spend a minimum amount of time on each stimulus could help ensure better engagement.

6.2.6 Platform and Influencer Type

The study focused on the context of Instagram, which, while significant, does not encompass the full range of social media platforms where fitness influencers operate. Future research could explore how these dynamics play out on other platforms, such as YouTube, TikTok, or Facebook, to provide a more comprehensive understanding of influencer marketing across different social media environments. Moreover, the study did not differentiate between different types of fitness influencers, such as professional trainers versus fitness enthusiasts, which could have varying impacts on exercise motivation. Future research could investigate whether the type of influencer moderates the relationship between trustworthiness and exercise motivation.

6.2.7 Temporal Factors

The study does not account for potential temporal factors that might influence exercise motivation, such as seasonal variations in physical activity levels or the impact of ongoing fitness trends. Future research could consider these temporal factors to provide a more comprehensive understanding of how influencer marketing affects exercise motivation over time.

7. ACKNOWLEDGEMENTS

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9. APPENDIX

9.1 AI disclaimer

During the preparation of this work, the author(s) used ChatGPT in order to find relevant scientific literature, formulate research questions, improve grammar and writing, gather information, generate ideas and overcome writer's block, write R code, and create images for stimulus material. The author(s) also used Microsoft Word for writing and editing the document, and Mendeley for managing and citing references. After using these tools/services, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the work.

9.2 Tables

Table 5 – Correlation Matrix

	Ex_1	Ex_2	Ex_3	Ex_4	Ex_5	Tr_1	Tr_2	Tr_3	Tr_4	Tr_5	Gender	Age	Education	Pre_Ex
Ex_1	1.000	0.729	0.528	0.680	0.630	0.034	0.177	0.101	0.171	0.208	-0.220	0.229	0.242	-0.010
Ex_2	0.729	1.000	0.661	0.791	0.761	0.095	0.234	0.132	0.160	0.215	-0.345	0.061	0.125	0.118
Ex_3	0.528	0.661	1.000	0.738	0.672	0.054	0.145	0.077	0.161	0.205	-0.184	0.035	0.028	0.167
Ex_4	0.680	0.791	0.738	1.000	0.806	0.207	0.196	0.110	0.166	0.217	-0.260	0.134	0.077	0.072
Ex_5	0.630	0.761	0.672	0.806	1.000	0.176	0.243	0.110	0.104	0.214	-0.288	0.183	0.186	0.109
Tr_1	0.034	0.095	0.054	0.207	0.176	1.000	0.514	0.516	0.302	0.494	-0.047	0.059	-0.062	-0.026
Tr_2	0.177	0.234	0.145	0.196	0.243	0.514	1.000	0.649	0.719	0.785	-0.079	0.079	0.039	-0.118
Tr_3	0.101	0.132	0.077	0.110	0.110	0.516	0.649	1.000	0.530	0.736	-0.046	-0.134	-0.094	-0.131
Tr_4	0.171	0.160	0.161	0.166	0.104	0.302	0.719	0.530	1.000	0.720	0.093	0.045	-0.011	-0.169
Tr_5	0.208	0.215	0.205	0.217	0.214	0.494	0.785	0.736	0.720	1.000	-0.090	-0.030	-0.005	-0.144
Gender	-0.220	-0.345	-0.184	-0.260	-0.288	-0.047	-0.079	-0.046	0.093	-0.090	1.000	-0.149	-0.045	-0.190
Age	0.229	0.061	0.035	0.134	0.183	0.059	0.079	-0.134	0.045	-0.030	-0.149	1.000	0.338	-0.136
Education	0.242	0.125	0.028	0.077	0.186	-0.062	0.039	-0.094	-0.011	-0.005	-0.045	0.338	1.000	-0.107
Pre_Ex	-0.010	0.118	0.167	0.072	0.109	-0.026	-0.118	-0.131	-0.169	-0.144	-0.190	-0.136	-0.107	1.000

Table 6 – Version 1 (Nothing)

	Mean	SD	α
Exercise motivation			0.935
Ex_1	2.040	1.136	
Ex_2	2.240	1.200	
Ex_3	2.000	1.000	
Ex_4	2.120	1.013	
Ex_5	2.040	0.889	
Trustworthiness			0.873
Tr_1	2.600	1.080	
Tr_2	2.520	0.963	
Tr_3	2.560	1.044	
Tr_4	2.200	0.913	
Tr_5	2.320	1.030	

Table 7 - Version 2 (Sponsorship disclosure)

	Mean	SD	α
Exercise motivation			0.960
Ex_1	2.000	1.080	
Ex_2	1.920	0.997	
Ex_3	2.120	1.130	
Ex_4	2.200	1.190	
Ex_5	2.040	1.060	
Trustworthiness			0.874
Tr_1	2.760	1.128	
Tr_2	2.400	1.118	
Tr_3	2.400	1.080	
Tr_4	2.120	1.013	
Tr_5	2.360	0.952	

Table 8 - Version 3 (Product placement)

	Mean	SD	α
Exercise motivation			0.923
Ex_1	2.154	1.084	
Ex_2	2.462	1.104	
Ex_3	2.346	1.018	
Ex_4	2.692	1.123	
Ex_5	2.538	0.989	
Trustworthiness			0.886
Tr_1	2.846	0.925	
Tr_2	2.808	1.021	
Tr_3	2.769	1.142	
Tr_4	2.808	1.021	
Tr_5	2.808	0.895	

Table 9 - Version 4 (Product placement + Sponsorship disclosure)

	Mean	SD	α
Exercise motivation			0.860
Ex_1	2.154	1.047	
Ex_2	2.308	1.087	
Ex_3	2.077	1.055	
Ex_4	2.692	1.225	
Ex_5	2.385	1.203	
Trustworthiness			0.874
Tr_1	2.962	1.038	
Tr_2	2.692	0.970	
Tr_3	2.654	1.018	
Tr_4	2.923	1.017	
Tr_5	2.808	0.939	

9.3 Survey

Ethical Consent Statement

Welcome to the Research Study

Thank you for considering participation in this study on the impact of social media on fitness behaviors. We are particularly interested in your reactions and attitudes towards fitness content.

Your Participation:

If you decide to participate, you will complete an online questionnaire that will take approximately 5-10 minutes. Your responses will help us understand how social media influences fitness motivation.

Data Use and Confidentiality:

- Your participation is voluntary, and you can withdraw at any time without penalty.
- We will not collect any personal information, and your data will be completely anonymous.
- Your privacy will be strictly protected. Responses will be anonymized and data will be aggregated to ensure no personal information is identifiable.

Consent:

By proceeding with the questionnaire, you confirm that you understand the above information and agree to participate in this research study, fully aware that you can withdraw at any time.

Contact Information:

For any questions or further information about the research, please contact Luuk Einhaus at: l.e.einhaus@student.utwente.nl

Do you agree to participate in this study?

- Yes, I agree
- No, I don't agree

Questions:

For this study, a hypothetical post on Instagram will be used. Instagram is a social media platform with a significant number of influencers showcasing fitness-related content. Before reading the post, some Instagram fitness-related questions are asked. Please answer these questions and then proceed with the survey.

Do you have an Instagram account?

- Yes
- No

Are you Familiar with the term 'Fitness Influencer'.

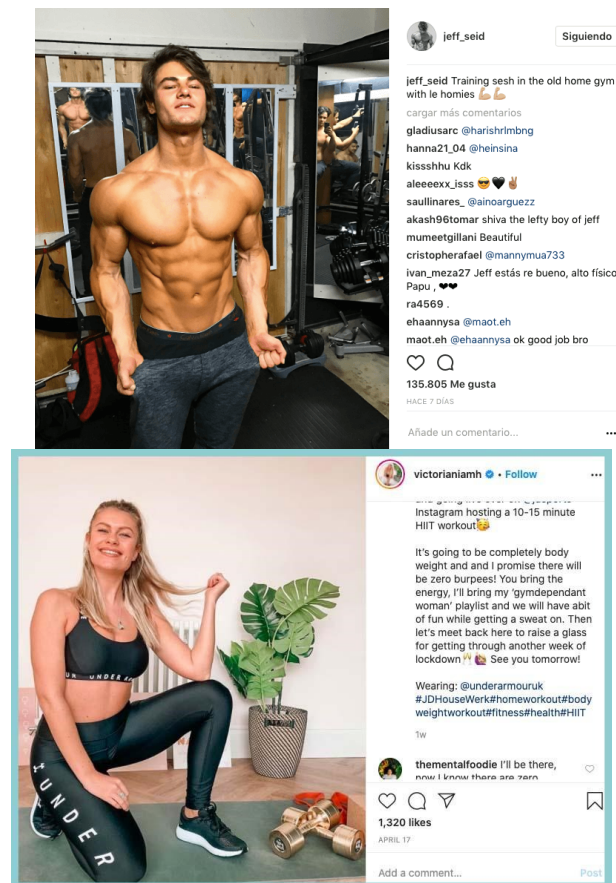
- Yes
- No

If No is selected the participant will see the following information:

Fitness influencer:

A fitness influencer is a person with a significant social media following who shares fitness, health, and wellness content, often providing workout tips, motivation, and product recommendations to inspire and guide their audience.

Examples:



Do you agree with the following statements? Select the most appropriate answer. (from 1= “Strongly disagree” to 5= “Strongly agree”)

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
Maintaining a regular fitness routine is important to me.					
I am motivated to exercise regularly without needing external encouragement					
I enjoy physical exercise and look forward to my workout sessions					
I am committed to living a healthy lifestyle that includes regular physical activity.					
I often set fitness-related goals for myself and work diligently to achieve them					

Do you agree with the following statements? Select the most appropriate answer. (from 1= “Strongly disagree” to 5= “Strongly agree”)

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
Fitness influencers generally appear to be dependable.					
I believe fitness influencers are usually honest in their content.					
The fitness advice provided by fitness influencers is generally reliable.					
Fitness influencers seem sincere in their recommendations.					
Overall, fitness influencers can be trusted.					

Please read the following description carefully and follow the instructions on the next page.
Once you proceed, you will not be able to return to the previous set of questions.

Felix, a 23-year-old fitness enthusiast living and studying in the Netherlands, has been consistently sharing fitness-related content on Instagram since 2020. His posts primarily focus on fitness, health, and wellness, offering workout tips, motivational insights, and occasional product recommendations to inspire and guide his audience. Felix is dedicated to promoting a healthy lifestyle, balancing his studies with his passion for fitness. His content aims to motivate his followers to stay active and make informed choices about their health and wellness.

For the purposes of this study, kindly imagine that you follow Felix on Instagram. While browsing through your news feed, you come across the following post.

Please take a careful look at it, as the following questions will relate to what you've observed.

****At this point one out of four of the stimulus materials is shown****

Do you agree with the following statements? Select the most appropriate answer. (from 1= “Strongly disagree” to 5= “Strongly agree”)

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
Felix appears to be dependable.					
I believe Felix is honest in their content.					
The fitness advice provided by Felix is reliable.					
Felix seems sincere in their recommendations.					
Overall, Felix can be trusted.					

Do you agree with the following statements? Select the most appropriate answer. (from 1= “Strongly disagree” to 5= “Strongly agree”)

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
After seeing Felix post, maintaining a regular fitness routine is more important to me.					
After seeing Felix post, I feel more motivated to exercise regularly.					
After seeing Felix post, I look forward to my workout sessions more than before.					
After seeing Felix post, I feel more committed to living a healthy lifestyle that includes regular physical activity.					
After seeing Felix post, I am more motivated to set fitness-related goals for myself and work diligently to achieve them.					

Almost done! Now I would like to ask you to answer the following questions about yourself.

What is your gender?

- Male
- Female

How old are you?

- ...

What is your highest level of education?

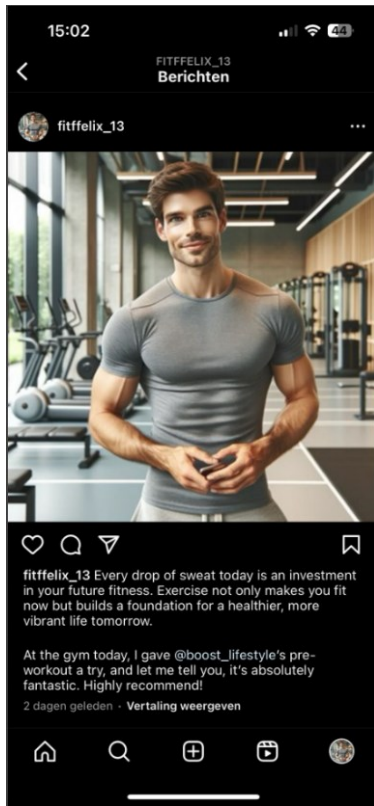
- Secondary School
- Bachelor's degree
- Master's degree
- Apprenticeship (Berufsausbildung/Beroepsopleiding)
- Other:

Please note that the Instagram post was created solely for the purpose of this research. The Instagram influencer, Felix, and the brand “Boost_lifestyle” are fictional. The image of Felix was generated using AI.

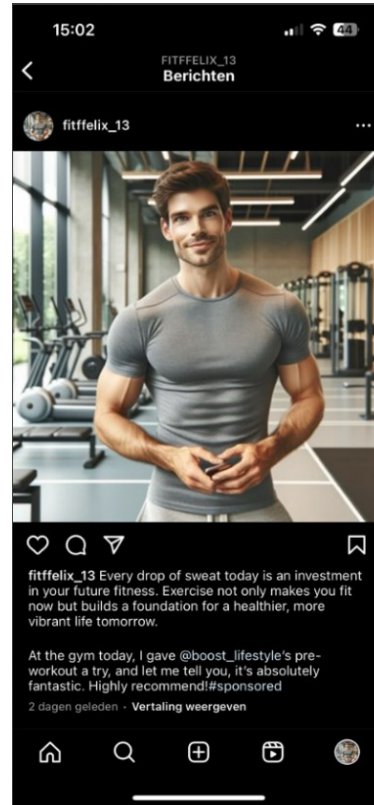
Thank you for your participation!

9.4 Stimulus material

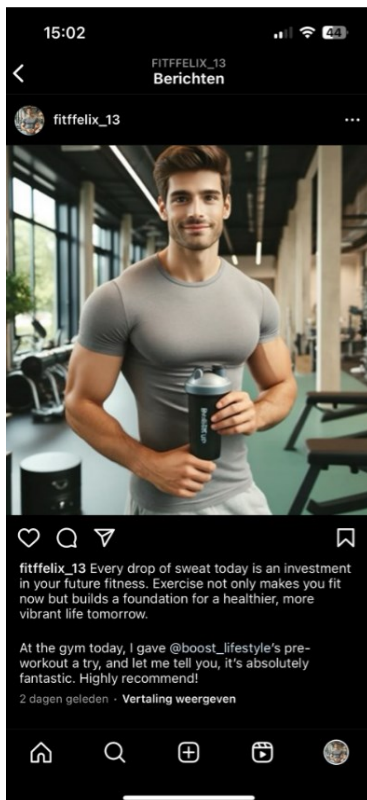
Version 1 - Nothing



Version 2 – Sponsorship disclosure



Version 3 – Product placement



Version 4 – Product placement + Sponsorship disclosure

